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Testimony

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Hearing on

Addressing Price Volatility in Climate Change Legislation

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Introduction

Thank you for the opportunity to testify today on the subject of addressing price volatility in climate change legislation. My name is Daniel Lashof. I am director the Climate Center at the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing.

NRDC is a member of the United States Climate Action Partnership (USCAP), an organization of 25 major companies and 5 leading non-governmental organizations that has come together to call on Congress to enact comprehensive climate protection legislation this year requiring significant reductions of greenhouse gas emissions. While I am only testifying on behalf of NRDC, my testimony will draw substantially from USCAP's Blueprint for Legislative Action.[1] In some cases I will make recommendations that, while consistent with the Blueprint, go beyond its scope or provide greater specificity, and I will try to make this distinction clear.

The current economic crisis presents enormous challenges, but it also provides a tremendous opportunity to rebuild our economy in a way that ensures sustainable, long-term growth. In the next 20 years, the United States will invest more than $3 trillion in our energy infrastructure – electric power plants, fuel refineries, transmission and transportation infrastructure – and trillions more on energy-consuming buildings, appliances, and vehicles.[2] If we reduce the amount of money we spend importing fuels and building antiquated power plants and redirect these resources toward cleaner, energy-efficient technologies, we can improve our competitive position while creating millions of quality jobs, strengthen our national security by cutting our reliance on fossil fuels, and avert the climate crisis by dramatically reducing global warming pollution.

Guaranteeing Reduced Emission of Global Warming Pollution

A cap on global warming pollution that gradually reduces the number of emission permits available is the most effective way to repower America with clean energy and ensure that the United States reduces emissions of heat-trapping gases by 80 percent or more, as the best science indicates is needed to reduce the risk of catastrophic climate change. A pollution cap is designed to directly regulate the quantity of dangerous pollution emitted, providing the highest possible level of certainty that our environmental goals will be achieved.

Regardless of whether emission allowances are initially distributed through an auction, a statutory allocation formula, or some combination, allowances will trade on a secondary market at a clearing price that balances supply and demand. This creates some uncertainty about allowance prices and gives rise to concerns about allowance price volatility. A well designed and regulated carbon market, however, can provide environmental certainty while avoiding the risk of excessive price volatility.

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[1] http://us-cap.org/index.asp

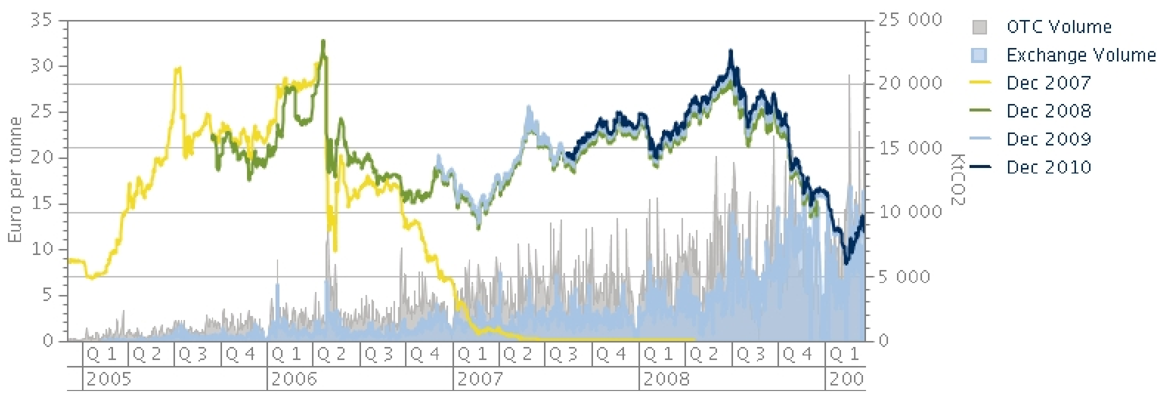
[2] World Energy Outlook 2006, International Energy Agency.

Price Fluctuations versus Price Volatility

Before discussing recommendations for climate legislation that can achieve this goal, let me emphasize that fluctuations in emission allowance prices are not necessarily a problem. Indeed, in a well-functioning carbon market the price of allowances will respond to fluctuations in the economy in ways that reduce carbon emissions without creating an undue burden during difficult economic times. The price of carbon allowances will fall during economic downturns as the CO_2 output from the economy slows, depressing demand for allowances, and will rise as the CO_2 output from the economy accelerates. This responsive way of pricing carbon means that a cap and trade system provides a degree of automatic economic stabilization, just as recent declines in the price of oil and other commodities is currently providing some relief for consumers and stimulating demand for a broad range of goods and services.

The recent decline in the price of allowances in the European Union's Emissions Trading System (EU ETS) is an example of just this kind of appropriate market behavior. This should not be confused with the collapse in pre-2008 vintage EU ETS allowance prices, which was due to serious flaws in the initial design of the market that have since been corrected. In particular, allowances issued for the EU ETS pilot phase, which ended on December 31, 2007, could not be held (or "banked") for use during the compliance periods beginning on January 1, 2008. When it became clear that there were excess allowances available for the pilot phase their price collapsed (Figure 1.)

Figure 1. EU ETS Allowance Prices

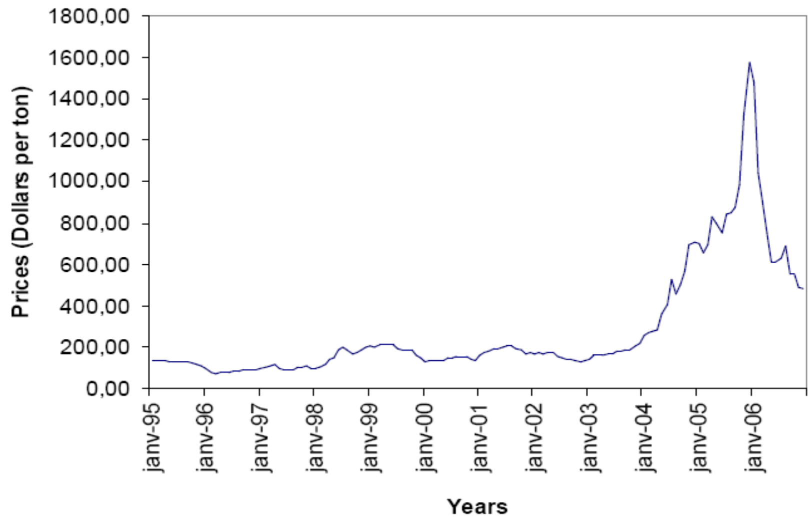


Source: Point Carbon EUA OTC assessment

The sulfur dioxide (SO_2) cap established by the acid rain program of the 1990 Clean Air Act amendments provides a longer history of allowance prices that is worth examining. The SO_2 cap began in 1995 and has succeeded in substantially reducing emissions at costs that have been far lower than anticipated. From 1995 until 2004 SO_2 allowance prices were quite stable, with spot prices generally between \$150 and \$200 per ton. Prices began to rise in 2004 in anticipation of further restrictions of SO_2 emissions and spiked in December 2005 largely due to this policy uncertainty, but also reflecting very tight markets for related commodities at that time, particularly natural gas. SO_2 prices fell sharply in early 2006 and since the second quarter of 2006 stability has returned to the SO_2 market, although at a higher average price point than previously, reflecting expectations that the SO_2 cap will become tighter in the near future.

While the experience of the SO_2 market is instructive, it is important to recognize the difference in scope between the SO_2 cap and a future CO_2 cap. The SO_2 cap applies to a relatively limited number of coal-fired power plants, whereas as a comprehensive CO_2 cap, while still manageable, would include all large facilities that burn fossil fuels as well as petroleum products regulated at the refinery gate or importer. The overall value of SO_2 allowances at $400 per ton is roughly $3 billion per year, compared to greenhouse gases allowances which at $10-$20 per ton would be worth $60-$120 billion per year.

Figure 2. History of SO_2 Allowance Prices



Source: Denny Ellerman, MIT

Source: Sam Napolitano, EPA

Avoiding Excessive Price Volatility

While modest allowance price fluctuations are expected and can be beneficial, excessive volatility driven by unnecessary market uncertainty or market manipulation is problematic and should be avoided. This can be accomplished by including the following features in climate legislation:

1. A comprehensive cap covering the broadest feasible set of emission sources.
2. Banking of emission allowances.
3. Effective carbon market regulation.
4. Ample access to high quality offsets.
5. Robust complementary measures to promote energy efficiency, cleaner transportation options, and energy supply technology transformation.
6. An allowance price floor established through a reserve price in the primary allowance auction.
7. A strategic offset and allowance reserve made available at a trigger price set to avoid undue economic harm.

1. Comprehensive Cap

The most basic way to limit the risk of allowance price volatility is to establish the broadest possible program to limit global warming pollution. Covering as many emission sources as possible increases the opportunities to find low cost emission reductions and provides the maximum degree of compliance flexibility while ensuring that the overall emission limits are achieved. USCAP recommends covering emissions from large stationary sources and the carbon content of fossil fuels used by remaining sources (with large defined as existing facilities that emit more than 25,000 tons of CO_2-equivalent per year and new facilities that emit more than 10,000 tons). A cap defined in this way can cover 85 percent or more of total U.S. greenhouse gas emissions.

2. Banking of Emission Allowances

Allowing firms to hold, or “bank” unused emission allowances and offsets for use in future years provides a very beneficial form of compliance flexibility that will dampen allowance price volatility. Unlike other commodities, there are no physical storage costs for banking emission allowances and there are clear environmental benefits from the early emission reductions that would be achieved in order to leave unused allowances available for banking.

Firms will tend to bank allowances if they believe that current allowance prices are relatively low and they expect that allowance prices will rise at a rate faster than the rate of return they could earn on the cash value of their allowances. This will prevent allowance prices from falling excessively as increased banking reduces the supply of allowances in the short term. If firms build up a bank of emission allowances or offsets during the early years of the program they can draw down this bank when allowance prices rise, putting downward pressure on prices during years when allowances are in relatively short supply. This has been the case in the acid rain program, and is one reason why SO_2 allowance prices have been relatively stable with the exception of a short period when prices spiked primarily due to policy uncertainty. As mentioned above, inability to bank allowances during the EU ETS pilot phase was a key reason EU allowance prices were so volatile during that period.

USCAP recommends allowing unlimited banking by firms with compliance obligations, with appropriate restrictions that may be needed for firms that do not have compliance obligations aimed at preventing market manipulation.

3. Effective Carbon Market Regulation
Recent turmoil in the financial markets clearly demonstrates the dangers of unregulated trading of financial derivatives. The solution is not to prevent allowance trading, but rather to ensure effective oversight of allowance markets by an adequately-staffed regulatory agency. NRDC recommends enforcing contract limits in the spot market and limits on total positions (in excess of compliance requirements) to ensure that no one can exercise market power. Off balance sheet trades should be prohibited to ensure that all trading occurs on a transparent exchange, and sufficient margin requirements should be established to discourage speculative trades.

4. Ample Access to High Quality Offsets
A cap that covers as many sources as possible is the most effective way to provide compliance flexibility while ensuring that the environmental objectives are achieved. Some sources, however, will be administratively or politically infeasible to include within the cap. Provided that rigorous quality standards are enforced, allowing "offsets" generated by reducing emissions from these sources or by increasing carbon sequestration in farm fields and forests can further expand compliance options and reduce the risk of excessive allowance prices. The ability to use international offsets can further expand opportunities for low-cost emissions abatement, provided that rigorous baselines are established that, over time, represent nationally appropriate country or sector-specific emission reduction commitments that cover a suitable share of a country's emissions, consistent with the global goal of avoiding dangerous climate change.

Congress should establish overall limits on the use of offsets to help EPA enforce offset quality standards and to serve as a backstop to prevent excessive use of offsets from overly depressing allowance prices and interfering with needed investments in transformative technology. USCAP recommends setting an initial annual limit of 2 billion tons on the use of offsets from all sources, and establishing a Carbon Market Board with the authority to raise this limit to no more than 3 billion tons if necessary to prevent undue economic harm from excessively high allowance prices. USCAP further recommends limiting the use of offsets for compliance to no more than 1.5 billion tons of domestic offsets and 1.5 billion tons of international offsets in any year.

5. Complementary Measures
A declining cap on global warming pollution will be the cornerstone of a comprehensive climate protection program, but by itself it will not achieve the emission reductions we need at the lowest possible overall cost to society. Complementary measures are needed to overcome market barriers to cost-effective energy efficiency measures as well as to accelerate innovations in low-emissions energy supplies that provide benefits to the economy at large that can not be captured by individual firms. Effective complementary measures, such as enforcing energy-efficient building codes and establishing a national Renewable Electricity Standard, will reduce demand for electricity, natural gas and transportation fuels, thereby reducing demand for and the price of emission allowances.

6. Allowance Price Floor
Price expectations help drive technology innovation and deployment. Therefore, cost containment measures should permit allowance price signals to become stronger over time. Further, USCAP recommends that Congress set a reserve price for the auction of allowances at a level that helps to avoid prices that are too low to encourage long-term capital investments in low- and no-carbon technologies. USCAP suggests that the price that could accomplish this objective is approximately $10 per ton at the outset of the program, and that this price could escalate over time at a rate greater than inflation and then flatten out around 2025.

7. Strategic Offset and Allowance Reserve

As a backstop measure to further limit the risk of extreme volatility and spikes in allowance prices USCAP recommends the establishment of a strategic reserve pool that includes: a) offsets, including but not limited to forest carbon tons derived from reducing tropical deforestation; and b) allowances borrowed from future compliance periods. Offsets and/or allowances in the strategic reserve pool would be released into the market when allowance prices reach a specific threshold price. The reserve pool auction threshold price should be set at a level that prevents undue economic harm from excessively high allowance prices, while being high enough to encourage technology transformation. USCAP recommends establishing a carbon market board to monitor the operation of the market and set the threshold price based on statutory criteria.

This approach to cost containment is intended to provide a high degree of confidence that allowance prices will remain within an acceptable band while maintaining the environmental integrity of the emissions cap. To accomplish these goals the reserve should contain a large number of offsets, and borrowed allowances should only be released as a last resort. If offsets are released from the reserve, revenue from their sale should be used to replenish the offset pool.

While USCAP does not make a specific recommendation about how the threshold price should be set or how offsets or allowances should be released from the reserve, let me provide a specific example of how the reserve could operate in order to make this approach more concrete. Congress could direct EPA to forecast expected allowance prices within six months after enactment of legislation establishing the cap. While retaining discretion to make adjustments if needed to prevent undue economic harm, the carbon market board could be directed to set the threshold price at twice the expected allowance price for the first three years of the program. After three years of market experience the threshold price could be set at twice the rolling average of actual prices over the previous three years. Offsets (or a limited number of allowances if the offset pool has been exhausted) could be released from the pool through regular auctions with a reserve price set at the threshold price. If market prices are expected to remain below the threshold price this auction would have no bidders and nothing would be released from the strategic reserve pool. If market prices would otherwise be expected to rise above the threshold price, provided that the available pool is large enough, allowance prices will be stabilized at the threshold price. Allowance prices would only rise above the threshold price if the offsets in the reserve pool were exhausted and bidders expected all borrowed allowance made available by the board to be purchased. Even in this unlikely event, the extra supply of compliance instruments injected into the market through this mechanism would substantially dampen price volatility.

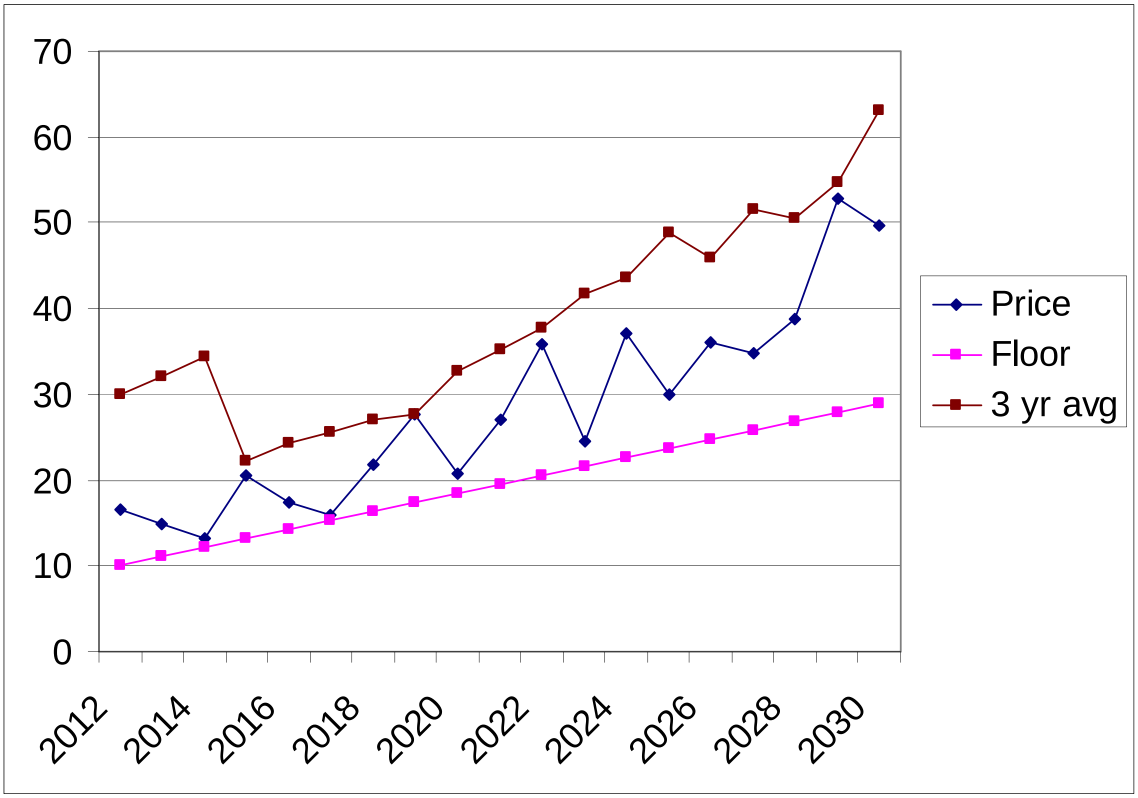
Figure 3 illustrates how the strategic reserve might operate with the price threshold specified in this way. To construct this simplified example I assume that allowance prices have a fundamental and a random component. The fundamental component begins at $15 per ton in 2012 and increases 7 percent per year. The random component allows allowance prices to fluctuate by up to 50% around this trend (which is an arbitrary assumption). The bottom curve shows the price floor, which is set at $10/ton in 2012 and increases by 5 percent per year. In this example allowance prices remain above the floor except in 2017, when the main auction reserve price result in some allowances remaining unsold. The upper curve starts at $30/ton and increases 7 percent per year until 2015, when it becomes twice the rolling average of the illustrative allowance prices during the previous three years. In this example the strategic reserve would only come into play in 2019, when the uncontrolled market price of allowances would exceed the threshold price. In this case additional offsets or allowances would be sold from the reserve, exerting downward pressure on allowance prices and keeping the actual price of allowances close to the threshold price.

The other key questions that must be addressed in the design of the strategic offset and allowance reserve are the size of the pool and the limit on how many borrowed allowances can be released in any given period. USCAP recommends that the strategic reserve contain "a very large number of offsets" and that the use of borrowed allowances be limited, but does not attempt to further define these features. NRDC recommends expanding the offset reserve with forest carbon tons from reduced tropical deforestation at an annual rate equal to at least 10 percent of current U.S. emissions (i.e. about 700 million tons per year) for a period of 10 years. These emission reductions will serve as a further contribution to reducing global warming to the extent that they are not actually tapped to prevent excessive allowance prices.

For the allowance component we recommend filling the reserve with 5 billion tons of allowances borrowed from the 2030-2050 caps. This represents about 70% of current annual emissions and about 9% of the total 2030-2050 allowance pool. Any unused allowances remaining in the reserve would be made available through the regular auction during the year from which it was drawn. To provide an indication of how many extra allowances might be needed in any given year to prevent price spikes I examined the year-to-year variability of total U.S. emissions of global warming pollution using data from the EPA emission inventory, which extends back to 1990 (Figure 4). Comparing annual emissions to the linear trend, I found that the maximum deviation was less than 200 million tons, with far smaller difference in most years. This suggests that expanding the supply of allowances by a few hundred million tons through an auction with a reserve price set at the threshold price should be sufficient to dampen price spikes caused by unexpectedly strong allowance demand in any given year. To provide an extra cushion I recommend limiting annual sales of borrowed allowance (over and above the use of offsets from the reserve) to no more than 400 million tons, which represents 6% of current annual emissions and 8% of the recommended allowance reserve pool.

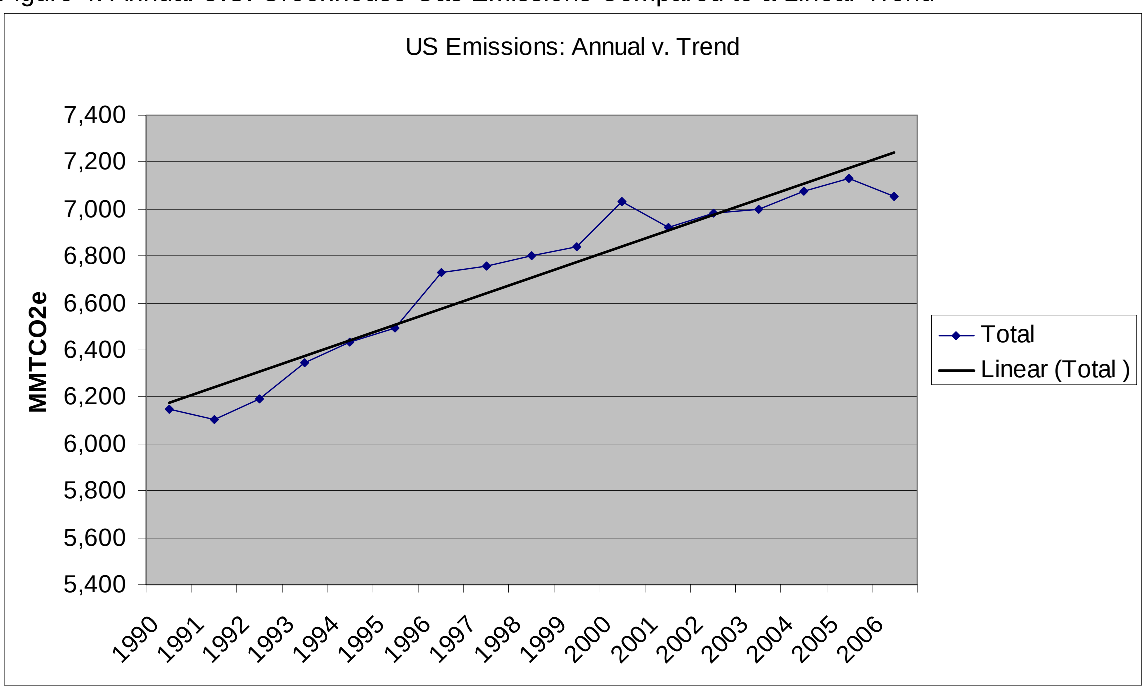
Mr. Chairman, that completes my testimony, I will be happy to take any questions you or other members of the subcommittee may have.

Figure 3. Price Threshold Illustration



Source: NRDC analysis

Figure 4. Annual U.S. Greenhouse Gas Emissions Compared to a Linear Trend



Source: EPA emissions Inventory; NRDC analysis